Discussion Papers

Politics and procurement: Evidence from cleaning contracts

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Discussion Paper No. 233
September 2008

ISSN 1795-0562

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HECER
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Politics and procurement: Evidence from cleaning contracts*

Abstract

We study the effects of politics on public procurement in Swedish municipalities in 1990-98 using data on cleaning services. No procuring municipality committed to a standard auction format or to an explicit scoring rule. Political identity of the governing party is not correlated with the decision to procure, the decision to restrict entry, or the number of invited firms. However, left-wing municipalities are more likely not to invite "in-house firms". In our data, the lowest bidder does not win 58% of the time, and conditional on the lowest bid not winning, the municipalities end up paying a premium of 43%. Our discrete choice analysis shows that while all municipalities are price sensitive, left-wing councils 1.5 as price sensitive as right-wing councils. Conditional on bids, left-wing councils are more likely to choose a local firm. Politics thus matter and affect procurement outcomes.

JEL Classification: H57, D44, P16.

Keywords: Efficiency, favoritism, politics, public procurement.

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* We would like to thank Oriana Bandiera, Estelle Cantillon, Ken Hendricks, Harry Paarsch, James Powell, Dan Silverman, and Janne Tukiainen for discussions and Thierry Magnac and seminar participants in the XXIV Summer meeting of the Finnish Economists (Jyväskylä, 2007), Research Institute of Industrial Economics (IUI), HECER, Stockholm, the 2006 Toulouse conference on Public Services and Management, EARIE 2006, Department of Economics at Umeå University, and SITE Development Forum's Workshop (Stockholm, 2008) for comments at various stages of the project. The usual caveat applies.

1 Introduction

Political economy has for long studied the effects of political representation (ideologies and the identity of governing party) on the amount and composition of public spending.[1] This paper focuses, instead, on whether political representation affects how public spending is done and, in particular, how public services are procured.

Public procurement constitutes a large - 15% by OECD estimates (OECD, 2005) - and increasing part of economic activity. While there is a growing empirical literature on procurements and procurement auctions (e.g. Marion 2007, Bandiera, Prat, and Valletti, 2007), the political aspects of procurement decisions have to the best of our knowledge not been analyzed empirically before. We offer such an analysis by asking how the political identity of the governing party affects whether or not to procure a given service or good, and if, how to procure it. To this end, we study the following four questions: Q1: Who procures? Q2: Conditional on procuring, what types of auctions are organized and in particular, who organizes open entry (as opposed to restricted, i.e. by-invitation-only, entry) auctions? Q3: Conditional on organizing a restricted entry auction, how many and what type of firms are invited and by whom? And finally, Q4: What determines whose bid gets chosen?

Our aim is to contribute to the literature by studying public procurement auctions of a clearly defined low-tech product, (internal) cleaning service contracts, using data from Swedish municipalities in the 1990s. We have chosen cleaning services because its very simple production process that should make it

[1] See e.g. section 6 of Besley and Case (2003). Besley and Case report, for example, that Democratic governors in the US increase spending on state workers' compensation programs by 2$ per capita.

amenable to being procured. The service is simple to contract on and, as we will demonstrate, does not vary much in (unobserved) quality.[2] For the same reason, there should be relatively little reason to depart from standard auction formats, and from the policy of granting the contract to the lowest bidder.

Sweden provides a good testing ground for us for two primary reasons. First, it has been argued that despite a multiparty structure, there is a natural division into right- and left-wing in Swedish politics that matters for policy outcomes (e.g. Aronsson and Wikström 1996, Dahlberg and Johansson 2002, Pettersson-Lidbom 2001, 2008, and Hanes 2007): Pettersson-Lidbom (2001) finds, for example, that Swedish right-wing local governments accumulate more debt than left-wing ones if they are certain to be replaced.[3] It has also been documented that the Swedish left-wing municipalities spend and tax 2-3 percent more than the right-wing local governments and appear to care more about and be able to influence local unemployment (Pettersson-Lidbom 2008). The second reason why Sweden provides a good testing ground for us is that the Swedish procurement law of the time allowed the municipalities high degrees of freedom in organizing procurements.[4] Such circumstances seem to have been rather unique and do not exist e.g. within. the EU anymore, as the new EU directives on procurement processes are implemented across member states.

While our mostly cross-sectional data dictates that we can fully address endogeneity and unobserved heterogeneity only in studying the last (Q4) of our four

[2] Bajari, McMillan and Tadelis (2003) compare auctions and negotiations in procurement and stress the tradeoffs between hard-to-observe quality and price when objects are complex and contractual design incomplete. In our case, exactly opposite holds: Objects are simple and contractual design complete (at least when compared to the procurement of aircrafts and the like).

[3] Dahlberg and Johansson (2002) find that the central government distributes grants to areas where there are many swing voters. They do not study the effect of the identity of the party in power on this (presumable because there have been so few changes in central government in Sweden).

questions, our analysis delivers some striking findings on the first three (Q1-Q3): The propensity to procure cleaning services is not correlated with the political identity of the governing party. Conditional on procuring, *every* municipality grabbed the freedom allowed by the law, as *no* municipality committed to a standard (price) auction format of any kind. Nor did *any* municipality choose to have an explicit scoring rule. We find that entry was restricted for 30% of the time and that the political identity of the governing party is not correlated with organizing an auction with restricted entry. Conditional on organizing an auction with restricted entry, the number of firms invited to bid does not vary with the political identity of the governing party either. There is however a difference in the identity of the invited firms: Left-wing municipalities are more likely *not* to invite "in-house firms", i.e., the old cleaning departments of municipalities that have at some point been transformed into a company and that still are owned by the municipality.

Municipalities also grabbed the freedom allowed by the law to choose the winner on the basis of "best economic value", but left its contents completely undefined. Probably as a result of this, the lowest bidder does *not* win 58% of the time, and conditional on the lowest bid not winning, the municipalities end up paying on average 43% more than the lowest bid. In the raw data, the probability of the lowest bid *not* winning is 62.3% (49.8%) in municipalities with right-wing (left-wing) councils, and the difference is significant at 1% level. This result on the role of the governing party identity is confirmed when we apply the standard random utility framework to study the bureaucrat behavior (pioneered by McFadden 1975, 1976): Our bid level analysis of which bid gets chosen shows that while

[4] Public procurement continues to create controversy in Sweden even today: One of the leading Swedish daily newspapers, Dagens Nyheter, has in 2007 had several articles on the functioning of

all councils are price sensitive, the councils with left-wing majority are 1.5 times as price sensitive as the right-wing councils. We find that holding the bids constant, municipalities with a left-wing majority are more likely to choose a local firm. We also find that variation in other municipal characteristics (unemployment rate, population, and population density) have an effect on the choice of the winner. In these estimations we control for unobserved heterogeneity, such as municipal and object (e.g. the school which is to be cleaned) level unobservables. We find no systematic evidence of bids being endogenous.[5]

These findings have implications for the literature on public spending and provision of services. There is a long history of patronage in government contracts with private firms, and market-oriented procurement is often advocated as a means to block political concerns out of the process of providing public services. Our findings cast doubt on this view. Our findings also have implications for the economics literature on procurement auctions. We document that bureaucrat behavior and incentives matter in public procurement, especially in auctions in which the non-price attributes of bid(der)s are allowed to be a determinant of the award decision. We observe that the political identity of the governing party matters at micro-level, i.e., at the level of individual auction outcomes. This is not consistent with what is typically assumed in the literature on procurement auctions nor with parties preferring similar procurement (policy) outcomes in equilibrium (as predicted e.g. by strict convergence in the classical median voter models).

and alleged misconduct in public procurement.

[5] While our object – procurement auctions – necessarily makes the well developed and large auction literature relevant for us, we consciously have chosen to study questions that allow us to not take a stand on the issues at the heart of that literature: information of bidders, bidder types, and bidder strategies. The reason for this is simple: The complete freedom allowed by the Swedish procurement rules means that it seems impossible or at least extremely challenging to write down

In the following section, we describe in detail the legal and institutional environment, the product(s) (i.e., the objects of bidding) and the data. In section three we present our reduced form results on the first three questions (Q1-Q3). Section four is devoted to studying the fourth question (Q4) and, to this end, to developing a random utility model of choosing the winner. We offer conclusions in section five.

2 Institutional environment and data

2.1 Institutional environment and procurement law

Our data come from the period 1990-1998, and more than 90% of the data is from the latter half of the period. During the latter half, public procurement in Sweden was governed by the Public Procurement Act (LOU 1992:1528). While the law was not yet in force in 1990-1993, the rules that applied then were essentially the same as under the Public Procurement Act. This law specified the environment in which the Swedish municipalities and bidding firms acted and was based on the (then-prevailing) EU directives.

From the point of view of this paper the following features of the law are central: *First*, the municipalities were allowed to freely choose whether to procure or to produce in-house.[6] Conditional on deciding to procure, the law allowed them to decide whether to allow open entry or not. As for the mode of entry, the law

a (structural) auction model that would capture the essence of the environment in which the Swedish firms made participation and bidding decisions.

[6] We take municipalities' decisions about the number of cleaning service contracts that they procured, as well as their characteristics, as given. It is of course entirely possible that some municipalities decided to procure cleaning services for, say, some of their schools while keeping the cleaning of others in-house. For a study of the behavior and market orientation of the municipalities of a neighboring Scandinavian country (Denmark), see Christoffersen and Paldam (2003).

allowed for four types of procurement mechanisms.[7] The main difference between these is that two (Simplified, Open) allowed free entry while two (Restricted, Negotiated[8]) did not. Conditional on restricting entry, the law allowed the municipalities to decide how many and which firms to invite.

Second, while the law allowed a municipality to arrange simultaneous procurements (procurement auctions), combinatorial bidding was not applied (i.e., the procurement rules instructed firms to submit one bid per object and the municipality should accordingly have made decisions "object-by-object"). *Third*, only sealed bids were allowed. *Fourth*, the lowest bidder should have won. *Finally*, there was an exception to the "lowest bid wins" -rule: A municipality had the freedom to deem that some other bid was "most advantageous economically" when quality, environmental aspects, service and maintenance etc. were also taken into account. The law did not force municipalities to use any explicit scoring rules.[9] Nor did it mention for example the locality of the bidder as an allowable dimension, but seems not to have ruled it out either. Under the current rules, it is illegal.

It is illustrative of the atmosphere of the time that the freedom allowed by the law to deviate from choosing the lowest bid was seen as beneficial. The following quote from a book by a public sector lawyer testifies to this:

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[7] The law specified a threshold value of procurement (200 000€), below which Simplified and Direct were allowed, and above which Open, Restricted or Negotiated were required. The question if procurement mechanisms with restricted entry can be empirically motivated with high implementation costs is analyzed in Lundberg (2005). Using the same data as in the present paper Lundberg finds no evidence of such relation.

[8] While negotiations were allowed in Simplified and Negotiated procurements (see chapter 5, "Procurement of services", in the Public Procurement Act, LOU 1992:1528), they were not used in the procurements that we study.

[9] This has changed after our observation period, partly because of EU wide directives that dictate that as a general rule, explicit scoring has to be used. However, it is important to keep in mind that the clear purpose of the Public Procurement Act of 1992 was that if the lowest bidder is not awarded the contract, this has to be because along some well-specified (and ex ante notified) dimensions, some higher bid is "more economically advantageous".

> "The tender having the lowest price offered should be accepted. If it has been stated in the advertisement that the most economically advantageous tender will be accepted, factors specified therein can be taken into consideration in the assessment of tenders. The factors can be stated according to a degree of priority (LOU 1 ch. 22§), *however this is not a requirement. On the contrary, it can be advantageous to state in the advertisement that such factors are non-prioritized, since this increases the possibility of being able to choose the contractor*." (Löfving 1994, pp. 65; our translation and italics).

Besides the lax procurement law, an important aspect of the institutional environment is that we study decision making by Swedish municipalities in which a large fraction of the production of public services of the Swedish welfare state is done. This means, first, that they operate within a homogenous and common political framework. Second, decision making is delegated: The principals are the inhabitants of the municipality and the agent the municipal council (or more concretely, the civil servants working under the council's management, e.g., the personnel of municipal procurement units/offices). Third, the members of Swedish councils are members of political parties and the political system can be characterized, at least to a first approximation, bipartisan (see, e.g., Pettersson-Lidbom 2008). Finally, the decision making in the Swedish councils is influenced by political bargaining and thinking, making the design and award decisions in public procurement auctions subject to political ideology considerations.

Neither the prior political economy and science literature, nor the literature on public procurement, gives clear-cut predictions on the effect of political representation on procurement policies, except perhaps on the decision on whether or not to procure in the first place. The available evidence from Sweden suggests that when in control, the left-wing councils of Swedish municipalities employ systematically more government workers and are thereby able to influence local unem-

ployment (Pettersson-Lidbom 2008). In our context, this political preference may result in a reduced likelihood to procure.

It is less clear whether left-wing or right-wing municipalities prefer more open entry or if entry is restricted, invites more bidders or particular types of bidders.

2.2 Description of the data

Our bidding and procurement data come from a survey, administered to all Swedish municipalities asking them for procurement documents regarding internal cleaning services. The documents are contract notice, technical specification, list of bidders, bids, and the decision protocol stating the winner of the contract. The response rate was 79.5 percent. We don't know if all the Swedish municipalities that organized procurement auctions in cleaning services are in our data: 59 of the 229 municipalities that replied to the survey organized at least one procurement auction in cleaning services during 1990-98. We have supplemented this data with municipality characteristics, obtained from Statistics Sweden (SCB).

A first look at the documents show that though the non-price criteria, if any, should have been posted in advance, the weight attached to each criterion in the evaluation was unknown to the bidders prior to the bidding.[10] In other words, municipalities did not use any explicit scoring rules during our observation period. Our preliminary analysis of the procurement documentation shows that conditional on procuring, *every* municipality grabbed the freedom allowed by the law, as *no* municipality opted for and committed to a standard (price) auction format of any kind. Nor did *any* municipality choose to have an explicit scoring rule.

[10] An example of a typical contract notice is found in the Appendix.

Table 1 describes how the procurements in our data are organized. Procurement is an instance where a municipality purchases cleaning services for one or more "objects" through a joint procurement procedure. The objects are the premises to be cleaned and the bidders are Swedish firms. This feature of the data means that the event of procurement can consist of one or more "auctions". While a separate, non-combinatorial auction is run for each object, there is an element of sealed, pay-your-bid "multi-object auctions" to these procurements. As the column titled "All" shows the number of procurements in our data is 131 and the total number objects is 758, of which 721 are included in our analysis.[11] The number of objects per procurement varies from one (single-unit) to 74, and the number of bids per object from one to 37. Some 50 objects obtain at most 3 bids, half the objects 4-7 bids, and another 200 8-11 bids. We observe a total of 5926 bids. The frequency at which the various procurement mechanisms were used is also reported. Entry was open (i.e., classified either open or simplified in the table) in 70% of the procurements.

[TABLE 1 HERE]

Table 1 also describes the municipalities who organize the procurements. We have data (as of the date of the procurement) on the unemployment rate ($unemp_m$), population ($popul_m$), population density ($popdens_m$), average income ($income_m$), share of inhabitants having a higher education ($highedu_m$) and a measure of political ideology. Following earlier work with Swedish municipal level data (e.g. Aronsson and Wikström 1996), our measure of political ideology is council composition. We define red_m to be an indicator for the median voter of council m, i.e., it is equal to one if there is a left-wing majority ($redprop_m > 50\%$) and zero oth-

[11] The remaining 37 contracts are excluded from the analysis, because there was one procurement in which each contract had multiple winners (i.e., the contracts were "framework agreements").

erwise.[12] This indicator captures the fact that party control changes discontinuously at 50 percent of the vote share (Pettersson-Lidbom 2008) and is a parsimonious way to capture the main division in Swedish politics.[13] Left-wing majority councils auctioned 454 objects, right-wing councils 267.

Table 2 describes the objects. The vast majority of them are schools or day-care centers. The objects vary according to the characteristics we observe: size in square meters ($size_{mi}$), contract length ($length_{mi}$), prolongation period ($period_{mi}$), and required cleaning frequency ($freq_{mi}$). The contract length is the stated contract period and the prolongation period states the period that the contract can be extended with if the current holder of the contract has performed well after the contract period has expired. The prolongation period is normally one or two years. The cleaning frequency is the number of days during a year the object should be cleaned.

[TABLE 2 HERE]

The bidders in the procurements are Swedish cleaning service firms. There are in total 322 firms in our data. They can be divided roughly into four categories. First, there are 4 firms that operate nationally ("National"). This group includes the largest, and some medium sized firms. For confidentiality reasons we have labeled these national firms "*Ns*", *s = a, b, c, d*. The largest national firms "*Na*" and "*Nb*" submit bids for most objects, whereas "*Nc*" and "*Nd*", two other national firms, submit bids for 6-10% of objects. Second, there are mid-size firms that are active regionally ("Regional"). According to our classification, 70.5% of

[12] Following earlier work, we categorize as leftwing council members those belonging to either the Left Party or the Social Democratic Party, while members of the Conservative Party, the Center Party, the Liberal Party, and the Christian Democratic Party are categorized as rightwing.

[13] E.g. Aronsson, Lundberg and Wikström (2000, pp. 192) write: "These two variables [based on council decomposition into leftwing (socialist) and rightwing (non-socialist)] are assumed to control for the widespread belief that socialists and non-socialists usually have different views about public spending and that a fragmented parliament might find it hard to hold back public spending."

the firms are regional. The third group consists of small local firms that only bid in one or a couple of municipalities ("Local"). The local firms constitute 27.5% of the firms in the sample. The final group consists of firms that used to be the cleaning department of a municipality, but have at some point been transformed into a company that still is owned by the municipality ("In-house production"). An in-house municipal production unit participates in bidding for almost 40% of objects.

[TABLE 3 HERE]

Table 3 describes the bidding level data for the estimation sample. It shows that bids are on average 160 Swedish krona per sq.m. (circa 15€/sq.m.). Almost three fifths of the bids (58%) were submitted in auctions with open entry (categorized as open or simplified). The table also shows that most of our data (88%) is from years (1994-1998) when the Public Procurement Act was in force. Regional firms submit most of the bids (41%), followed by the few national firms (30%) and local firms (21%). Inhouse firms submit 8% of the bids.

On average, there were 7.45 bidders in the auctions. For almost 58% of the 721 objects, the municipalities did not choose the lowest bid. Moreover, some municipalities never award an object to the lowest bidder. Conditional on the lowest bid not winning, the average difference between the winning and lowest bid is 42.9%.[14] The raw correlation between the lowest bid not winning and the number of entrants (bids) is 0.17 (significant at 5% level).[15]

[14] Over all objects/auctions, the average difference between the winning and lowest bids is 24.7%.

[15] The lowest bid won in 51% of open entry auctions, and only in 25% of auctions with restricted entry. The correlation is entirely due to left-wing councils (correlation 0.30 and significant at 5% level), as the correlation is only 0.06 (insignificant at 5% level) in right-wing councils. This indicates that not choosing the lowest bid is positively correlated with the number of bids in the left-wing municipalities.

3 Municipal decisions on procurement organization

In this section, we focus on the first three questions of ours: Q1: Who procures? Q2: Conditional on procuring, what types of auctions are organized and in particular, who organizes open entry auctions? Q3: Conditional on organizing a restricted entry auction, how many and what type of firms get invited?

3.1 Q1: To procure or not?

A first decision the Swedish policy-makers had to make was whether or not to procure. The raw data reveals that only a minority of the municipalities used the option: Only 26% (59/229) of the municipalities in the data organized at least one procurement auction in cleaning services during 1990-98.

In Table 4 (Column 1), we report the results of a Logit regression in which the dependent variable is an indicator that is equal to one for those municipalities that reported to have organized at least one procurement auction and is zero otherwise. The explanatory variables are $unemp_m$, $popul_m$, $popdens_m$, $income_m$, $highedu_m$ and red_m, all measured at the start of our sample (as of 1990). There are 226 municipalities in the estimation sample.

The results show that the propensity to procure cleaning services is not correlated with the political identity of the governing party. This is not in line with the view that left-wing municipalities are systematically against market-orientation, nor with the available Swedish evidence which suggests that the left-wing Swedish municipalities prefer larger public sector (Pettersson-Lidbom 2008). If one believes that this sort of political thinking characterizes Swedish municipalities with left-wing councils, it is a bit surprising that the preference does not result in a reduced likelihood to procure in our data.

The results on the control variables show that larger and high income municipalities are more likely to have organized a procurement auction. These results are quite intuitive, as size and income are proxies for market size.

3.2 Q2: What type of auctions?

Conditional on organizing a procurement auction, the next decision the Swedish policy-makers had to make was whether or not to allow for open entry. From the raw data (Table 1) we know that entry was restricted in 30% of the cases.

In Table 4 (Column 2), we report the results of a Logit regression in which the dependent variable is an indicator that is equal to one for those procurements that had an open entry and is zero otherwise. The explanatory variables are $unemp_m$, $popul_m$, $popdens_m$, $income_m$, $highedu_m$ and red_m, all measured at the time the auction was organized, and a year dummy, taking the value of one for years before 1994 and zero thereafter.[16] There are 130 procurements in the estimation sample.

The results show that the political identity of the governing party is not correlated with organizing an auction with restricted entry. There is some evidence that high income municipalities restrict entry more often.

[TABLE 4 HERE]

[16] We have also run a regression in which we control for the number and type of contracts, as well as for the year when the procurements were organized. The qualitative results on the role of the political identity of the governing party did not change. In these estimations, the number of objects was negatively related with free entry (see also Lundberg, 2005).

3.3 How many and which bidders to invite?

The raw data shows that in auctions with restricted entry, there are 7.8 (5.9) bidders on average if the municipality has right-wing (left-wing) council. The difference is statistically significant (*t*-value 2.7). As for the identity of the invited bidders, regional and national firms are nearly always invited: Their participation rates are 99.0% and 98.4%, respectively. There is more variation in the participation rates of local and in-house firms in auctions with restricted entry.

The question of how many and what types of firms get invited to an auction with a restricted entry is addressed in Columns 3 and 4 of Table 4. We report separate results for a count (Poisson) regression in which the dependent variable is the number of invited firms and for a bivariate Probit regression in which we ask whether observable characteristics explain which types of firms are invited. The bivariate Probit regression includes equations only for local and in-house firms (as there is not enough variation in the participation rates of regional and national firms). Besides the year dummy, the explanatory variables in these regressions are $unemp_m$, $popul_m$, $popdens_m$, $income_m$, $higheduc_m$ and red_m, all measured at the time the auction was organized. There are 314 procurement auctions in the estimation samples.

We find that conditional on organizing an auction with restricted entry, the number of firms invited to bid does not vary with the political identity of the governing party.[17] However, it has an effect on the identity of the invited firms: A left-wing majority is more likely *not* to invite in-house firms. This suggests some form of non-neutrality, as the political identity of the governing party affects the way procurements are designed. Interestingly, the correlation of the residuals in

the bivariate Probit is negative. This suggests that holding municipal characteristics constant, in-house firms are on average a substitute for local cleaning firms. We also find that larger municipalities and municipalities with high population density and unemployment rates are more likely invite in-house firms.

4 Modeling choice of winning bid

Raw data shows that in right-wing (left-wing) councils, the probability of the lowest bid *not* winning is 62.3% (49.8%). The difference is significant at 1% level. Conditional on the lowest bid not winning, the winning bid is on average 46.5% (35.2%) higher than the lowest bid in the right-wing (left-wing) municipalities. This difference is however insignificant. These numbers and tests suggest that rightwing councils award the contract more often to a bidder other than the lowest but conditional on doing so, they do *not* pay on average a larger premium over the lowest bid.

To study the choice of the winning bid in greater detail, we adopt the random utility model (McFadden 1974). We specify it to allow for the possibility that the lowest bid does not win because the municipalities care for political reasons about bid(der) attributes other than price.[18]

4.1 Econometric framework

To derive an econometric framework for our analysis, let the municipalities be indexed by m, $m = 1,...,M$, objects to be cleaned by i, $i = 1,...,I_m$, and bidders

[17] We have also run a Poisson regression in which we control for the number and type of contracts (objects). The qualitative results on the role of the political identity of the governing party did not change.

[18] An example is the locality of the firm, if the local politicians care about the firm's profits. Other such positive externalities include income taxes and employment (see Vagstad 1995).

(firms) by j, $j = 1,...,J_{mi}$. The indirect utility of municipality m from choosing bidder j to clean object i is:

$$U_{mij} = \psi_{mi} - (\eta_1 + \eta_2 \times red_m) \times bid_{mij} + q_{mij} + \varepsilon_{mij}, \qquad (1)$$

where ψ_{mi} refers to the additively separable effects of municipal/procurement/object characteristics, bid_{mij} to the bid (price) of firm j for object i in municipality m (in 10 000 kronor per square meter), q_{mij} to 'quality', and ε_{mij} to an error term.

The municipal/procurement/object characteristics, ψ_{mi}, reflect the mean utility that municipality m obtains when it has its premises cleaned and the object-specific deviations from the mean. It thus captures all additively separable effects of observable and unobservable municipal characteristics on municipal utility, e.g., regional structure, demographics, income distribution, voter preferences, and propensity to procure services. The term also refers to (un)observable object characteristics, such as the type, size, location, etc. of the object. It captures differences in the indirect utility derived, e.g., from having a clean health center as compared to having clean sports facilities. The assumed additive separability of these effects and the distributional (logit) assumption on the error term (see below) allow us to condition all these effects out in the estimation.[19]

The second term in (1), $(\eta_1 + \eta_2 \times red_m) \times bid_{mij}$, specifies the effect of a submitted bid on the choice, with $\eta_1 + \eta_2 \times red_m$ measuring the weight given to the bid. The weight is a function of the political ideology of the local government, allowing us to test whether the weight depends on the political ideology. One rea-

[19] The term controls in addition for the additively separable effects on the utility of those characteristics of the procurement event that do not vary over the bidding firms, such as whether or not entry to the auction was open and whether or not the object was auctioned as a part of a multi-object procurement.

son to test for this is that "bid preference programs" may explain the data. These programs award a contract to the lowest preferred bidder, provided that its bid is close enough to the lowest bid of the non-preferred bidders (e.g., McAfee and McMillan 1989, Krasnokutskaya and Seim 2006, Marion 2007). These programs give some firms preferential treatment, often because it is considered to be politically desirable.

The third term in (1), q_{mij}, refers to quality and is included because municipalities may have resorted to a scoring auction, which balances the quality of the bid(der) and price, or a to "beauty contest", in which no scoring rule is announced (Che 1993, Asker and Cantillon 2006).[20] In principle, we could write the quality term as $q_{mij} \equiv q^1_{mij} + q^2_{mj}$, where q^1_{mij} allows for the possibility that municipalities care about the quality of cleaning of *a particular object* for which firms are bidding (i.e., ex ante object-level quality differences) and where q^2_{mj} captures the possibility that there are *firm-specific*, as opposed to object-specific, quality differences (i.e., ex ante corporate-level quality differences).

The extensive documentation available to us on the technical specifications of the procurements and the specifics of the bids however suggest strongly that $q^1_{mij} \equiv 0$, i.e., that there are *no* ex ante quality differences at the object-level. That is, conditional on the corporate identity of the bidders, there are no ex ante discernible quality differences *between the bids for a specific object*. The most compelling support for this claim is provided by the technical specifications of the procurement instructions. We obtained the procurement instructions of all the objects (premises) in the data. These are in general *very* detailed - an example of a

[20] Bajari, McMillan and Tadelis (2003) compare auctions and negotiations in procurement. They stress the tradeoffs between hard-to-observe quality and price when objects are complex and contractual design incomplete.

typical technical specification can be found in the Appendix. Besides including a detailed description of the premises to be cleaned, the frequency of cleaning, cleaning method, cleaning substances that are preferred, and cleaning equipment that is to be employed, they also go into much more minute detail.[21] In addition, the submitted bids reveal that firms almost without exception only detail i) the object for which the firm is bidding, ii) the name and contact information of the bidder, iii) and the price, despite the forms providing space for additional information (see the Appendix for an example of a typical bid). If such information is provided, it is invariably uninformative as to potential quality differences.[22] Further supporting evidence comes from interviews that we conducted and especially the type of service we are studying.[23]

Even if there are no object-level differences in the quality of the bids, there may have been corporate-specific quality differences (i.e., $q_{mj}^2 \neq 0$). Indeed, the

[21] For example, it is common to state requirements as to the professional education of cleaning staff to be used. Similarly, the monitoring of cleaning is often specified in detail, and it is standard to require the firm to inform the municipality on several features of the working process, to provide records of hours of work, workforce and machinery employed etc.. As if this wasn't enough, in several instances the procurement instructions go into great detail as to how each space (e.g. classroom, toilet) is to be cleaned. All this suggests that it is very hard to differentiate one-self quality-wise.

[22] A typical piece of extra information is that the firm *j* plans to use certain substance *S* in cleaning, say, school *i*. The procurement instructions however always dictate in detail the environmental aspects of the substances to be used, and the extra information provided by firm *j* is that substance *S* fulfills these criteria. This also suggests that the firms were not able to differentiate themselves quality-wise in the bids.

[23] We interviewed a (former) civil servant who used to be in charge of public procurement, and three industry representatives. While the former civil servant maintained that local firms provide higher quality through better local presence, he also mentioned a nationally operating firm as providing similar quality. The three firm representatives were unanimous in stating that all firms provide equal quality in public procurements. (One of them, a local operator, maintained that they provide higher quality in *private* procurement.). They also mentioned that procurement instructions in public procurement are so well-defined that there is no room for (large) quality-differences. Our final support for the claim of no quality differences at the object-level is based on the type of service we are studying. The literature on the relative merit of negotiation versus auctions (e.g. Bajari, McMillan and Tadelis 2003 and the literature cited therein) is - for good reasons - mainly interested in "customized goods such as new buildings, fighter jets or consulting services" (Bajari, McMillan and Tadelis 2003, pp. 1). We take a completely opposite track by studying internal cleaning services. Our, admittedly layperson view of (good or bad) cleaning is that "you cannot describe it, but you know it when you see it". Cleaning is a labor-intensive, low-tech service, the quality of which is easily monitored, for which the requisite skills are relatively easily

only piece of information in the bids in which the firms were able to 'differentiate themselves' (besides the price) is the corporate identity of the bidder. To capture this, we let $q_{mj}^2 \equiv \sum_{k=1}^{K} X_{jk}\alpha_{mk}$, where the coefficients α_{mk} are a function of municipality characteristics $\alpha_{mk} \equiv \alpha_{k0} + \sum_{l=1}^{L} \alpha_{kl} Z_{ml}$, where X_{jk} denote the k^{th} observable characteristics of firm j (e.g., firm type, $k = 1, \ldots, K$) and where Z_{ml} are the l^{th} observable characteristic of municipality m (e.g., council composition, unemployment, $l = 1, \ldots, L$). This specification allows X_{jk} and Z_{ml} to have a multiplicative effect on the indirect utility.[24]

The last term in (1), ε_{mij}, is a stochastic error term that captures intrinsic randomness in municipality decision making. It allows for idiosyncrasies decision-making that resulted every now and then in the lowest bidder not winning. These idiosyncrasies may have been driven in part by lack of established procurement practices and by the flexible legislative procurement framework of the 1990s. We assume that ε_{mij} was unobservable to bidders and distributed i.i.d. type I extreme value.

Given the above assumptions, the probability that bidder w wins in a procurement auction for object i organized by municipality m is (McFadden 1974):

$$\Pr[y_{mi} = w] = \frac{\exp\left\{-(\eta_1 + \eta_2 \times red_m) \times bid_{miw} + q_{mw}^2\right\}}{\sum_{j=1}^{J_{mi}} \exp\left\{-(\eta_1 + \eta_2 \times red_m) \times bid_{mij} + q_{mj}^2\right\}} \qquad (2)$$

acquired and are wide-spread, and cleaning services is an industry in which barriers to entry are relatively low.

[24] It is worth point out two things about this specification: First, the econometric model already conditions on ψ_{mi}, i.e., on the (direct) effects of municipal/procurement/object characteristics on the indirect utility. Second, when X_{jk} includes firm (type) dummies, $\alpha_{k0}X_{jk}$ captures fixed firm (firm type) characteristics. These terms control for the effect on choice of permanent quality differences between firms that are valued similarly by all municipalities. Together with the bids, these terms thus allow controlling e.g. for the presence of a bid/price preference program in which *all* municipalities run a *similar*, biased procurement auction that award contracts to the lowest

where $q_{mj}^2 = \sum_{k=1}^{K} X_{jk} \left(\alpha_{k0} + \sum_{l=1}^{L} \alpha_{kl} Z_{ml} \right)$.[25] As specified, the model corresponds to the standard conditional/mixed logit model and can be estimated by maximum likelihood (ML). The ML estimation assumes that the bids are exogenous, and as we report below, the exogeneity of bids can be tested and is not rejected by the data.

4.2 Empirical results

Main results

Table 5 displays the estimation results: In column (1), the regressors include bid_{mij} and $red_m \times bid_{mij}$ only. For column (2), we additionally include the three firm type -dummies. For column (3), we additionally include $X_j \times Z_m$, i.e., the interactions between firm type -dummies and red_m. For column (4) we add the interactions between the firm type -dummies and the remaining municipality characteristics ($unemp_m$, $popul_m$, $popdens_m$, $income_m$, $highedu_m$). In column (5), we replicate the estimations of column (3), except that we add dummies for all firms with at least 20 bids (the results are robust to using a lower cutoff; see the robustness tests).[26] These dummies allow for firm-specific deviations from the firm-type dummies. Finally, in column (6), we replicate the estimations of column (4), except that we add dummies for all firms with at least 20 bids. Each column

preferred bidders (say, to local firms), provided that their bids are close enough to the lowest bid of the non-preferred bidder.

[25] It is worth pointing out that things that do not vary within an auction drop out. One implication of this is that the mixed logit should be relatively immune to sample selection bias. This would be the case as long as the decision to procure the cleaning services, the choice of the entry mode, and the choices related to the particular object are independent of the individual bidders/bids. As many of those choices are made prior to firms submitting their bids, this seems a plausible assumption.

[26] There are 322 firms in the sample, some of which only have a few bids.

displays the results of Wald-tests for the null hypotheses that the sum of the coefficients of the bid is zero and that the (added) control variables are jointly zero.

As the table shows, the bid coefficient is always negative and the weight put on price varies with political ideology: Leftwing municipalities put much more weight on the bids and the increase in the weight is always statistically significant. This suggests, in particular, that while all councils are price sensitive, the councils with left-wing majority are 1.5-2 times as price sensitive as the right-wing councils. This result is robust across the columns.

Both the control variables (excluding firm fixed effects) and the firm fixed effects are jointly significant in each column. The data thus support the largest specification, reported in column (6). From there we find that the coefficients of red_m*$national_j$, red_m*$regional_j$ and red_m*$inhouse_j$ are all negative and jointly significant (p-value = 0.017). Two of the three estimates are individually significant at better than the 5% level. This means that holding constant the bids (and the way the other observed municipal characteristics affect the award decision), municipalities with left-wing councils are more likely to choose a local firm.

We also find that variation in the characteristics of municipals has an effect on the choice of the winner: Holding the bids constant, increases in unemployment co-vary positively with municipalities choosing regional, national and in-house firms over local firms. An explanation for the last finding could be that in-house firms may be pressured to use more labor than small local of firms, and that larger regional and national firms are better able to commit to either increasing or not decreasing their workforce.[27] In more densely populated municipalities local firms are preferred over national firms, whereas in larger (by population) munici-

[27] In the interviews we conducted, the firm representatives claimed that all types of firms hire mainly from the local labor market.

palities, local firms are preferred over all other types of firms. It is however hard to explain why these municipality attributes have an effect on the choice of the winner.[28]

Taken together, these findings suggest that municipalities grabbed the freedom allowed by the law to choose the winner. They also suggest another form of non-neutrality, as the political identity of the governing party affects the choice of the winner. While we cannot be conclusive on why that is the case, it seems to be important to understand better the effect of political incentives on public procurement outcomes, especially in auctions in which the non-price attributes of bid(der)s are allowed to be a determinant of the award decision.

[TABLE 5 HERE]

Endogeneity of bids

The estimations presented in Table 5 assume that the bids are exogenous, ruling out 'favoritism' that would affect the bids of the firms (i.e., favoritism that the firms are aware of when submitting their bids). Favoritism (or even corruption) may however be present when the buyer has to delegate the organization of procurement auctions to an agent.[29] In Burguet and Che (2004), for example, the lowest bid does not always win because the procurement agent may manipulate a dimension of the submitted bid to favor a high bidder in exchange for a bribe (see

[28] We are reluctant to give these results a causal interpretation. The reason is that we have not modeled the firms' bidding strategies, and therefore it is very likely that a change in the characteristics of a municipality would lead to different bids.

[29] Sweden is regularly rated as one of the least corrupt societies. Yet, Transparency International (2006) states that "The Nordic countries dominate the top scores in the 2006 Corruption Perceptions Index for the European Union and other Western European countries. But they have no grounds for complacency as scandals in recent years have shown that there is sadly no such thing as a corruption-free zone."

also Laffont and Tirole 1991, Compte, Lambert and Verdier 2005, and Menezes and Monteiro 2006). Because the Swedish procurement law allowed the municipal procurement offices high degrees of freedom in choosing the winner, the procurement offices may have found it relatively easy to manipulate a dimension of the submitted bid (e.g., quality assessment) to favor a high bidder.[30] This could lead to endogenous bids, because a firm who knows that it will be favored can bid higher and still expect to win.

To allow for favoritism and to test for the endogeneity of the bids, we augment the basic choice model with a favoritism term, f_{mij}, to get

$$\Pr[y_{mi} = w] = \frac{\exp\left\{-(\eta_1 + \eta_2 \times red_m) \times bid_{miw} + q_{mw}^2 + f_{miw}\right\}}{\sum_{j=1}^{J_{mi}} \exp\left\{-(\eta_1 + \eta_2 \times red_m) \times bid_{mij} + q_{mj}^2 + f_{miw}\right\}}. \quad (2)$$

This specification immediately shows that favoritism does not lead to endogenous bids if there is no heterogeneity in how prone bidders are to look for favors (i.e. if $f_{mij} \equiv f_{mi}$). The reason for this is that the econometric model conditions out such additively separable effects. The same applies if there is no heterogeneity in the vulnerability of the municipalities to favoritism (i.e. if $f_{mij} \equiv f_j$). The reason is that the model we estimate conditions on the firm-type/fixed effects via term q_{mj}^2. The endogeneity of bids is thus a concern to us only if there are appropriate 'matches' in the data, i.e. if firms that look for a favor meet procurement officers who are vulnerable to meet that demand.

[30] Because the procurement officer could pick any bid, we can exclude 'magic number favoritism' wherein the corrupt procurement bureaucrat revises the bid of the favored bidder, or provides an opportunity for this bidder to do so after all the other bids have been opened (see, e.g., Compte, Lambert and Verdier 2005).

Given (2), we can test for $f_{mij} = 0$ using the control function method of Petrin and Train (2005, 2006).[31] Applying their method to (2) requires that municipalities' 'willingness to pay' for a cleaning contract is increasing in the degree of favoritism (f_{mij}). This implies that firms who know that they will be favored can bid higher and still expect to win. We implement the test as a Wald test, which corresponds to a generalized method of moments over-identification test. We recover a proxy, $\hat{f}_{mij} = bid_{mij} - \hat{E}\left[bid_{mij} \middle| W_{mij} \right]$, where W_{mij} includes all other factors but f_{mij} that the firms take into account when submitting bids.[32] We estimate the conditional expectation using cross-municipality variation in the bid data and include the proxy, $\hat{f}_{mij}$, directly into the random utility specification.[33]

The results of the Wald-tests for the null hypotheses of the exogeneity of the bids are reported at the bottom of Table 5. While the *p*-values for Columns (1)-(4) suggest that we can reject the null hypothesis of no endogeneity for municipalities with a left-wing majority, the Wald-tests show that once firm fixed effects are allowed, the bids are not endogenous (see columns (5) and (6)). This finding is not

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[31] These papers consider characteristic-based discrete choice models of demand in a situation when not all relevant product attributes are observed by the econometrician. In that set-up, the price of the product can be correlated with the unobserved part of consumers' utility. This is likely, if consumers' willingness to pay for product is increasing in the unobserved product attribute. The analogy of this to our approach is immediate.

[32] Assuming that firms increase their bids when they expect to get a favor, the bids are monotonically increasing in f_{mij}. This implies that the bids are a function of the unobserved attribute and that they are invertible in it.

[33] To generate an instrument for the bid of firm *j* for object *i* in municipality *m*, we regress the bids on municipality and object characteristics and firm dummies excluding all bids in municipality *m*. We then predict how firm *j* would bid for object *i* in municipality *m* to obtain a Hausman-type instrument for bid (price). By assumption, the instrument is independent of the vulnerability of municipality *m* to favoritism. Using the entire sample of bids, we then recover the expect bid function by regressing the bids on municipality and object characteristics, firm dummies, and the instrument. Finally, we compute the proxy, include it in the utility specification (interacted with red_m) and test whether the parameters on the proxy are significant. The 1st stage *p*-values for our instruments are 0.07 in the bid equation.

inconsistent with the result of Bandiera, Pratt and Valletti (2007), who find that most of the waste in their data on Italian procurement is "passive" (bad decisions) rather than "active" (generating utility to the procurer).

Robustness tests

We have explored the robustness of our results in four ways. Taking each of them in turn:

The first concern to address is that the multi-object nature of the data may explain the observed behavior. In many instances, a municipality procured cleaning services for several premises simultaneously. To minimize immediate procurement costs, the municipalities should have awarded each contract to the lowest bidder. In a multi-object context such a procedure may however be a source of inefficiency (e.g. Jehiel and Moldovanu 2003). The municipalities may thus have taken an aggregate of the bids into account, even if the rules instructed the firms to submit bids object-by-object and the municipalities to make decisions object-by-object. To test whether the aggregate bid matter for the choice (there are no combinatorial bids in the data), we include two new regressors to the choice model: The first is $avgbid_{mij}$, computed as the weighted average bid (10 000 kronor/sq.m.) of firm *j* (weighted by object size) that it submitted for the objects that were auctioned simultaneously with object *i*. The second is rat_{mij}, defined as the fraction of objects for which firm *j* submitted a bid (also measured using sq.m.) in the procurement in which object *i* was auctioned. The underlying assumption is that, after having conditioned out additively separable multi-object features that are constant over firms within an object and a procurement, the weighted average of the submitted bids is a proxy for the multi-object characteristic that the municipalities care about when making the award decision.

The results (not reported) show that the inclusion of these two new regressors does not change our main findings. For example, the coefficients of red_m and red_m*bid_{mij} are now -185 and -100, and the coefficients of the municipality characteristic-firm type interactions are very close to those reported in Table 5. We find some evidence that the municipalities have taken the aggregate of the bids into account, as $avgbid_{mij}$ obtains a negative (-5.001) and highly significant coefficient (p-value < 0.01).

For our second robustness check we change the way the firm fixed effects are controlled for in the basic estimation. Instead of including firm dummies for all the bidders who have more than 20 bids in the sample, we estimate the model (with exogenous bids) using 15 bids as the threshold.[34] There are no major changes in the qualitative results. The coefficients of red_m and red_m*bid_{mij} are now -198 and -161. While the latter point estimate is clearly smaller than that reported in Column (6) of Table 5, it is within two standard errors (45) of the red_m*bid_{mij} coefficient in Column (6). The statistical significance of the interaction terms between firm-type -dummies and municipal characteristics changes somewhat, with all interactions with population now being insignificant. This is what we expect, because the more there are firm fixed effects, the less precisely we can estimate the firm type -dummies.

The third robustness check considers the effects of fly-by-night firms who bid (very) low but are known to provide (very) poor quality, leading to municipalities not choosing the lowest bid. We test for the presence of such firms by excluding from the sample all objects for which the difference (in percentage terms) between the lowest and 2nd lowest bid is in the 95th percentile. Re-

[34] There are 172 firms with less than 10 bids; of these, 92 have 1 bid, 32 2 bids, 10 3 bids, 13 4 bids, and 25 5-9 bids.

estimating the conditional logit model(s) reproduces the results reported above in Table 5 with minor quantitative changes: The coefficients of red_m and red_m*bid_{mij} are now -197 and -100 and within a standard deviation of our results in Column (6) of Table 5.

Finally, for the fourth robustness check, we estimate a logit model in which the dependent variable is whether or not the lowest bid wins and the explanatory variables are the difference between the lowest and 2nd lowest bid, an interaction of this difference with red_m, and all five municipality characteristics. This estimation echoes our earlier findings about the price sensitivity of political parties: The larger the difference, the more likely that the lowest bid wins. The effect is not significant for right-wing majority councils (coeff. 6.211, *p*-value 0.875) but is highly significant in councils with a left-wing majority (coeff. 292.012, *p*-value 0.000).

5 Conclusions

Does political representation affect how public spending is done and how are public services procured? To address these questions, we have studied the organization of public procurement of cleaning service contracts in Swedish municipalities. These services are simple to contract on and, as we have shown, do not vary much in quality. There are few, if any, compelling reasons to depart from standard auction formats and from the policy of granting the contract to the lowest bidder in this environment.

Our data come from a period when the law allowed the municipalities high degrees of freedom in designing and running procurements. This institutional environment left a lot of room for discretion and may thus explain the outcome we observe in our data: Conditional on deciding to organize a procurement auction,

no municipality committed to a standard (price) auction format of any kind, nor did they choose to have an explicit scoring rule. Municipalities also exploited the freedom allowed by the law to invite bidders and choose the winner: A left-wing majority is more likely not to invite "in-house firms". The lowest bidder does not win 58% of the time, and the weight put on price varies with political ideology, with left-wing councils being more price-sensitive. Conditional on the lowest bid not winning, the municipalities end up paying on average 43% more than the lowest bid. Holding the bids constant, left-wing majority councils are more likely to let local firms win.

Taken together, our results suggest that politics both does and does not matter in procurement. The decision to procure or not, the choice of entry mode, and the number of firms invited to bid are not subject to political influence in our data. Given this, it is somewhat striking to find that politics matters at the very micro-level: which firms to invite, how much weight to put on bids (relative to the non-price attributes), and which type of firm's bid to choose.

These findings have implications for the literature on public spending and provision of services: While the propensity to procure cleaning services is not correlated with the political identity of the governing party, the design and especially award policies are. This finding casts doubt on the notion that market-oriented procurement is less subject to political concerns than public (internal) provision. This is a cause of concern, not least because political involvement may reduce the amount of cost savings that can be obtained from using procurement auctions (see Christoffersen, Paldam and Wurtz 2007 for evidence on the costs differences between public and private units in the cleaning of Danish schools).

Our findings also point to the importance of understanding better political incentives and how they shape the design of and award decisions in public pro-

curement auctions, especially in auctions in which the non-price attributes of bid(der)s are allowed to be a determinant of the award decision. Why political competition matters, how it affects procurement outcomes (e.g. firms' bidding strategies) and which kinds of public procurement are most affected by political representation clearly warrant further analyses.

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Table 1. Descriptive statistics

		Allocation mechanism				
		Simplified	Open	Restricted	Negotiated	All
# procurements		60	32	24	15	131
# objects		129	315	255	59	758
Variable	Statistic					
# objects	Mean	2.2	9.8	10.6	4.5	5.9
	Stand. dev.	3.9	10.7	16.3	8.1	10.1
	Maximum	27	37	74	29	74
	Minimum	1	1	1	1	1
# bids	Mean	7.1	8.9	7.4	5.5	7.8
on each	Stand. dev.	3.9	4.3	3.3	2.5	3.9
object	Maximum	37	25	16	22	37
	Minimum	1	1	2	2	1
# bids	Mean	6.1	8.1	7.8	6.3	6.9
in each	Stand. dev.	4.6	5.4	4.0	4.9	4.8
procurement	Maximum	37	25	16	22	37
	Minimum	1	1	2	2	1
Contract	Mean	1.5	2.0	1.6	1.7	1.7
period	Stand. dev.	0.6	0.6	0.6	0.8	0.7
	Maximum	3.0	4.0	3.0	3.0	4.0
	Minimum	0.2	0.5	0.8	0.5	0.2
Prolongation	Mean	0.7	0.8	0.8	0.3	0.7
period	Stand. dev.	0.6	0.5	0.7	0.5	0.6
	Maximum	2.0	2.0	2.0	1.0	2.0
	Minimum	0	0	0	0	0
		Municipal characteristics (procurement level)				
Red	Mean	0.4	0.48	0.42	0.43	0.46
	Stand. dev.	0.08	0.09	0.16	0.12	0.11
	Maximum	0.61	0.63	0.66	0.67	0.67
	Minimum	0.29	0.27	0.21	0.18	0.18
Density	Mean	201.64	248.32	684.46	905.54	297.85
	Stand. dev.	438.82	677.17	616.39	1252.11	611.00
	Maximum	2808.02	13.96	2796.35	2749.69	2808.02
	Minimum	4.60	4.58	60.54	24.20	4.60
Population	Mean	70845.46	69600.58	61812.29	38548.64	65402.72
	Stand. dev.	44.939.43	59363.74	19578.14	17305.05	44230.13
	Maximum	188478	188478	118606	57427	188478
	Minimum	10140	8710	26548	10795	8710
Unemployment	Mean	7.92	8.53	7.24	7.32	7.89
	Stand. dev.	2.12	2.02	1.98	1.99	2.23
	Maximum	11.28	13.96	10.51	9.15	13.96
	Minimum	1.94	4.58	3.95	1.76	1.76
Average income	Mean	146.91	146.38	170.24	147.26	148.80
	Stand. dev.	18.25	12.82	28.79	15.73	20.90
	Maximum	197.00	177.50	217.80	189.4	217.80
	Minimum	109.60	121.00	128.60	128.7	109.60
Higher education	Mean	0.08	0.07	0.10	0.07	0.08
	Stand. dev.	0.07	0.03	0.05	0.03	0.05
	Maximum	0.57	0.12	0.17	.016	0.57
	Minimum	0.03	0.02	0.05	0.03	0.02

Table 2. Objects

Type	Frequency	Percent	
Schools	319	42.1	757
Day care centers	302	39.9	757
Office	65	8.6	757
Medical health centers	27	3.6	757
Sport centers	16	2.1	757
Libraries	16	2.1	757
Others	12	1.6	757

Table 3. Bid level descriptive statistics

Variable	Mean	Std. dev.	Min	Max
Bid/sq.m. Swedish krona (SEK)	160.242	94.088	11	2174
Open	0.419	0.494	0	1
Restricted	0.411	0.492	0	1
Negotiated	0.061	0.240	0	1
Simplified	0.169	0.375	0	1
Local	0.209	0.406	0	1
Regional	0.408	0.492	0	1
Inhouse	0.080	0.272	0	1
National	0.304	0.460	0	1
t91	0.003	0.056	0	1
t92	0.055	0.228	0	1
t93	0.055	0.228	0	1
t94	0.143	0.350	0	1
t95	0.419	0.493	0	1
t96	0.254	0.435	0	1
t97	0.099	0.298	0	1
t98	0.020	0.139	0	1

NOTES: Sample is 5374 bids submitted for the 721 objects used in the estimation.

Table 4. Regression results (Q1-Q3)

	(1)	(2)	(3)	(4)	
	Q1:	Q2:	Q3:	Q3:	
	"Procure or not?"	"Entry mode?"	"How many?"	"Who is invited?"	
Variable				In-house	Local firms
Red	-0.407	-0.796	-0.115	-2.881 ***	1.089 *
	(0.412)	(0.567)	(0.387)	(0.667)	(0.561)
Popdens / 100	0.025	-0.042	0.026 *	0.090 ***	0.110
	(0.050)	(0.037)	(0.014)	(0.030)	(0.098)
Popul / 1000	0.031 ***	0.009	0.001	0.034 ***	0.022 **
	(0.008)	(0.008)	(0.004)	(0.010)	(0.009)
Unemp	-0.093	-0.149	-0.074	0.839 ***	-0.080
	(0.230)	(0.137)	(0.053)	(0.163)	(0.188)
Income	0.039 **	-0.063 ***	0.003	0.018	0.008
	(0.017)	(0.019)	(0.007)	(0.029)	(0.030)
Highedu	0.110	3.522	-5.341	-76.237 ***	3.490
	(0.663)	(7.793)	(7.114)	(20.019)	(10.940)
Time dummy (pre-1994)	-	-2.821 ***	-0.310	0.397	2.080 ***
		(0.833)	(0.259)	(0.789)	(0.598)
Constant	-6.233 ***	11.867 ***	2.313 *	-5.308	-2.131
	(1.940)	(3.663)	(1.206)	(4.665)	(5.565)
Rho				-0.98	
Log-likelihood	-98.129	-59.599	-727.927	-111.376	
Number of obs.	226	130	314	314	
LR-test: Rho = 0 (p-value)				<0.01	

NOTES: The numbers reported are the coefficients and standard errors. Method of estimation: Columns 1-2: Logit; Column 3: Poisson with clustered standard errors; Column 4: Bivariate Probit. The sample consists in Column 1 of municipalities, in Column 2 of procurements, and in Columns 3-4 of auctions (objects) with restricted entry. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

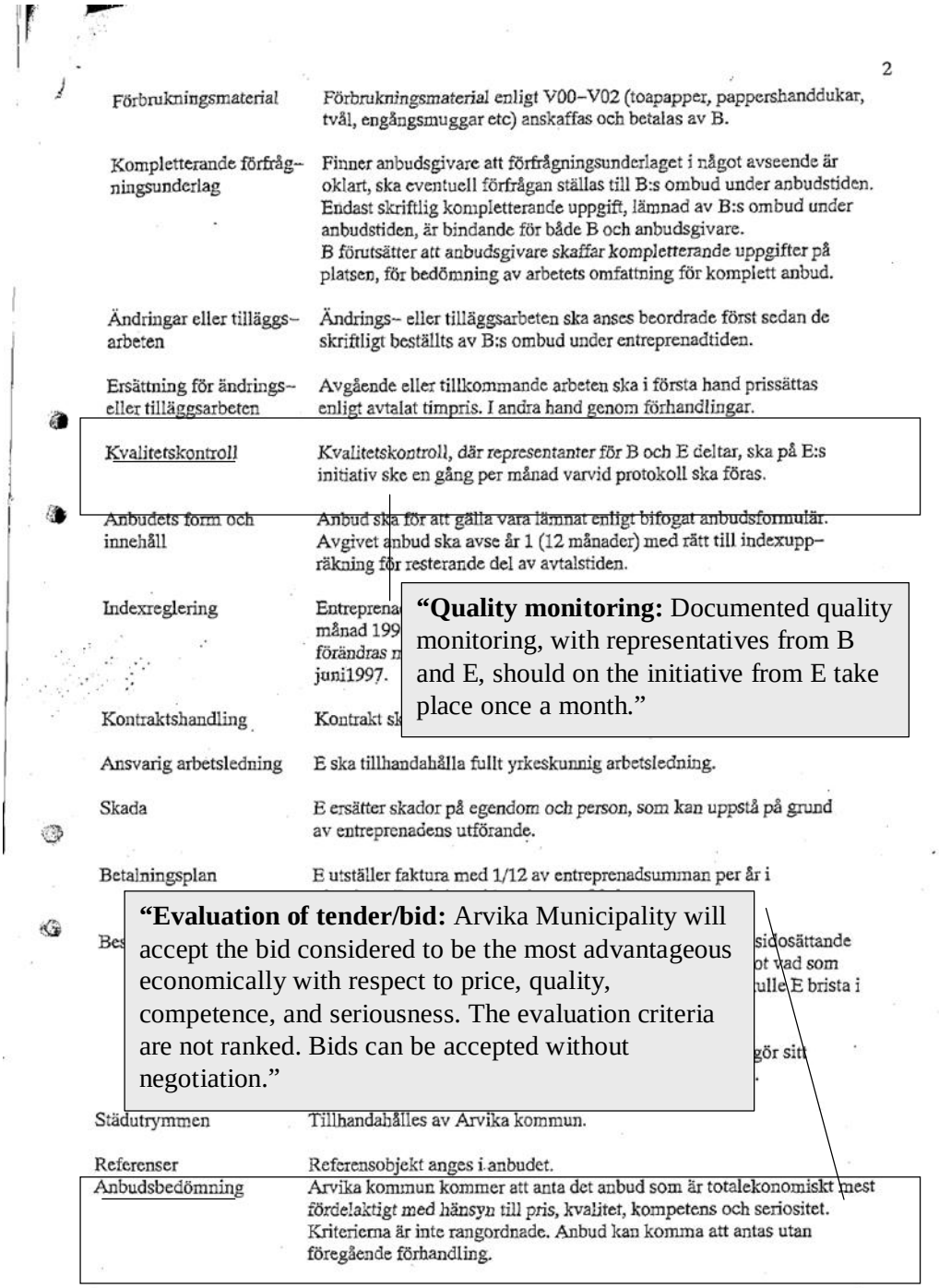
Table 5 Results from conditional logit (Q4)

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Bid	-165.05***	-155.105***	-155.226***	-150.022***	-203.287***	-202.832***
	(14.969)	(14.913)	(14.939)	(15.452)	(19.845)	(20.403)
Red*bid	-130.542***	-160.007***	-158.807***	-159.394***	-96.609**	-94.046**
	(33.860)	(35.594)	(36.475)	(36.918)	(39.65)	(40.023)
Regional		-0.209	0.285	-9.418***	-0.728**	-5.891
		(0.157)	(0.180)	(3.037)	(0.313)	(3.703)
National		0.744***	0.674***	-3.764	-0.646	-3.592
		(0.152)	(0.183)	(3.257)	(0.888)	(4.001)
Inhouse		2.257***	2.202***	0.339	0.152	-0.412
		(0.168)	(0.201)	(3.219)	(0.801)	(3.658)
Red*national			0.207	-1.119**	-0.246	-1.610***
			(0.334)	(0.463)	(0.380)	(0.535)
Red*regional			2.587	-0.525	0.110	-0.844
			(0.374)	(0.506)	(0.457)	(0.596)
Red*inhouse			0.183	-0.814	-0.158	-1.405**
			(0.369)	(0.498)	(0.412)	(0.568)
Income*regional				0.037**		0.013
				(0.014)		(0.019)
Income*national				0.019		0.015
				-0.017		(0.019)
Income*inhouse				0.001		-0.009
				(0.017)		(0.019)
Unemp*regional				0.512***		0.567***
				(0.160)		(0.192)
Unemp*national				0.397***		0.487***
				(0.145)		(0.174)
Unemp*inhouse				0.374**		0.449***
				(0.148)		(0.170)
Popdens*regional				-0.002		-0.0004
				(0.0003)		(0.0005)
Popdens*national				-0.003***		-0.003***
				(0.001)		(0.0009)
Popdens*inhouse				-0.002		-0.00004
				(0.0004)		(0.0005)
Popul*regional				-2.81e-06		-0.00001**
				(4.777e-06)		(6.604e-06)
Pop*national				-2.80e-06		-0.00001**
				(4.00e-06)		(5.865e-06)
Pop*inhouse				-5.30e-06		-.00002**
				(6.196e-06)		(7.642e-06)
Highedu*regional				0.996		4.714
				(6.248)		(8.447)
Highedu*national				-3.173		1.095
				(5.021)		(7.702)
Highedu*inhouse				-4.120		-1.534
				(13.308)		(14.921)
Red+Red*bid	0.000	0.000	0.000	0.000	0.000	0.000
Endog. Red	0.335	0.893	0.855	0.596	0.205	0.847
Endog. Red+Red*bid	0.002	0.039	0.014	0.038	0.164	0.290
Red*firm-type	-	-	0.170	0.068	0.763	0.017
Muni char * firm-type	-	-	-	0.000	-	0.000
Controls	-	0.000	0.000	0.000	0.000	0.000
Firm FE	-	-	-	-	0.000	0.000
Log-likelihood	-1203.095	-1061.0166	-1058.354	-995.944	-877.934	-838.824
Number of obs.	5372	5372	5372	5372	5372	5372

NOTES: The numbers reported are the coefficients and standard errors. Red+Red*bid is the p-value of a test of joint significance of the coefficients of the Bid and Red*bid variables. Endog. Red (Red+Red*bid) is the p-value of a test of endogeneity of the Bid (Bid and Red*bid) variable. Red*firm-type is the p-value of a Wald-test of the joint significance of the three council composition dummy – firm-type- dummy interactions. Muni char * firm – type is the p-value of a joint test of the joint significance of the other municipal characteristics - firm – type dummy – interactions. Controls is the p-value of a Wald-test of the joint significance of all control variables but firm fixed effects. Firm FE is the p-value of a Wald-test of the joint significance of the firm fixed effects. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Appendix. Procurement documents: contract notice, technical specification, and bid.

Figure 1A. Example of typical contract notice.



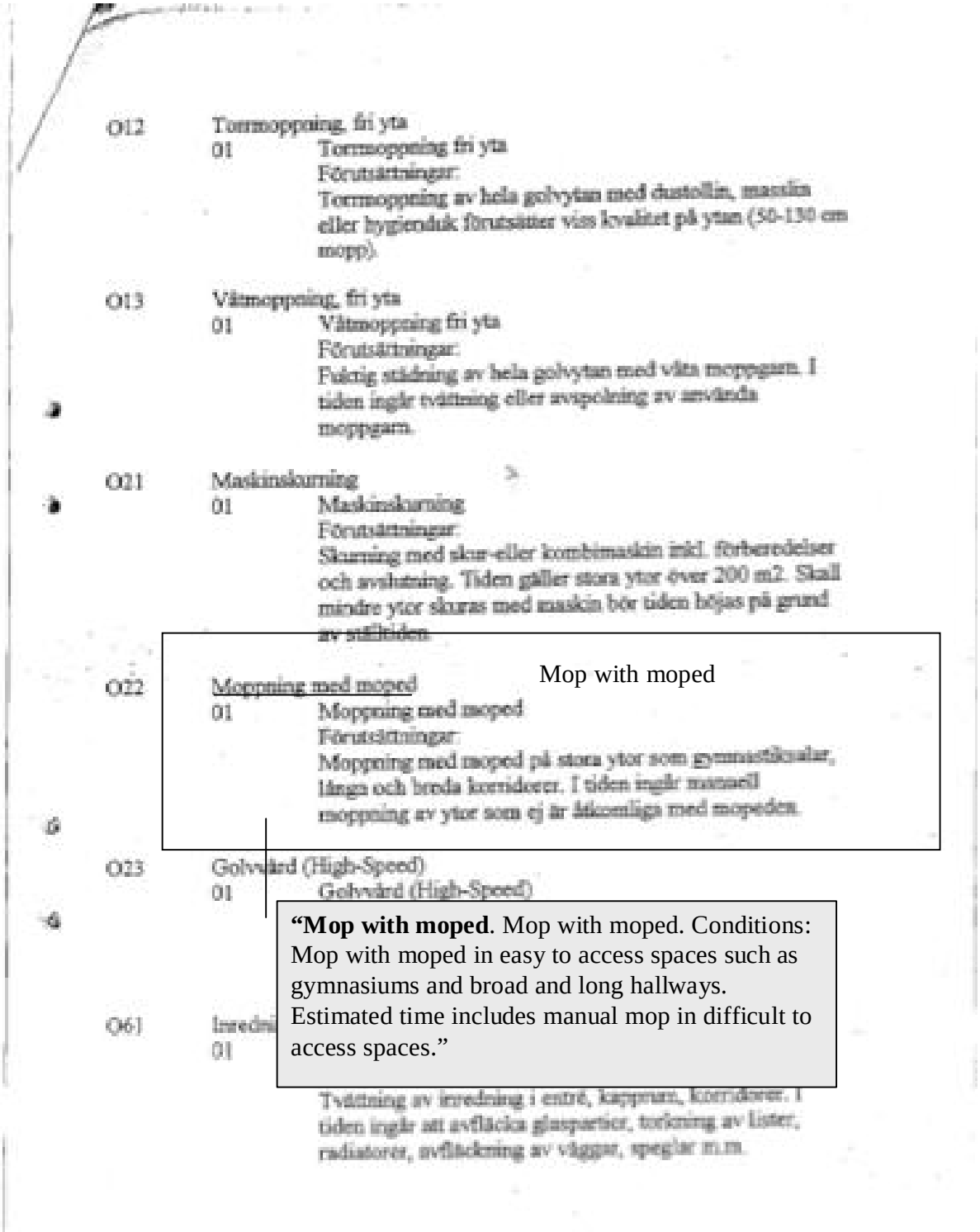
2

Förbrukningsmaterial	Förbrukningsmaterial enligt V00–V02 (toapapper, pappershanddukar, tvål, engångsmuggar etc) anskaffas och betalas av B.
Kompletterande förfrågningsunderlag	Finner anbudsgivare att förfrågningsunderlaget i något avseende är oklart, ska eventuell förfrågan ställas till B:s ombud under anbudstiden. Endast skriftlig kompletterande uppgift, lämnad av B:s ombud under anbudstiden, är bindande för både B och anbudsgivare. B förutsätter att anbudsgivare skaffar kompletterande uppgifter på platsen, för bedömning av arbetets omfattning för komplett anbud.
Ändringar eller tilläggsarbeten	Ändrings- eller tilläggsarbeten ska anses beordrade först sedan de skriftligt beställts av B:s ombud under entreprenadtiden.
Ersättning för ändrings- eller tilläggsarbeten	Avgående eller tillkommande arbeten ska i första hand prissättas enligt avtalat timpris. I andra hand genom förhandlingar.
Kvalitetskontroll	Kvalitetskontroll, där representanter för B och E deltar, ska på E:s initiativ ske en gång per månad varvid protokoll ska föras.
Anbudets form och innehåll	Anbud ska för att gälla vara lämnat enligt bifogat anbudsformulär. Avgivet anbud ska avse år 1 (12 månader) med rätt till indexuppräkning för resterande del av avtalstiden.
Indexreglering	Entreprena… månad 199… förändras n… juni1997.
Kontraktshandling	Kontrakt sk…
Ansvarig arbetsledning	E ska tillhandahålla fullt yrkeskunnig arbetsledning.
Skada	E ersätter skador på egendom och person, som kan uppstå på grund av entreprenadens utförande.
Betalningsplan	E utställer faktura med 1/12 av entreprenadsumman per år i
Bes…	…sidosättande …ot vad som …ulle E brista i … gör sitt …
Städutrymmen	Tillhandahålles av Arvika kommun.
Referenser	Referensobjekt anges i anbudet.
Anbudsbedömning	Arvika kommun kommer att anta det anbud som är totalekonomiskt mest fördelaktigt med hänsyn till pris, kvalitet, kompetens och seriositet. Kriterierna är inte rangordnade. Anbud kan komma att antas utan föregående förhandling.

"Quality monitoring: Documented quality monitoring, with representatives from B and E, should on the initiative from E take place once a month."

"Evaluation of tender/bid: Arvika Municipality will accept the bid considered to be the most advantageous economically with respect to price, quality, competence, and seriousness. The evaluation criteria are not ranked. Bids can be accepted without negotiation."

Figure 2A. Extract from a typical technical specification.



O12 Tormoppning, fri yta
01 Tormoppning fri yta
Förutsättningar:
Tormoppning av hela golvytan med dustollin, masslin eller hygienduk förutsätter viss kvalitet på ytan (50-130 cm mopp).

O13 Våtmoppning, fri yta
01 Våtmoppning fri yta
Förutsättningar:
Fuktig städning av hela golvytan med våta moppgarn. I tiden ingår tvättning eller avspolning av använda moppgarn.

O21 Maskinskurning
01 Maskinskurning
Förutsättningar:
Skurning med skur-eller kombimaskin inkl. förberedelser och avslutning. Tiden gäller stora ytor över 200 m2. Skall mindre ytor skuras med maskin bör tiden höjas på grund av ställtiden.

O22 Moppning med moped
01 Moppning med moped
Förutsättningar:
Moppning med moped på stora ytor som gymnastiksalar, långa och breda korridorer. I tiden ingår manuell moppning av ytor som ej är åtkomliga med mopeden.

Mop with moped

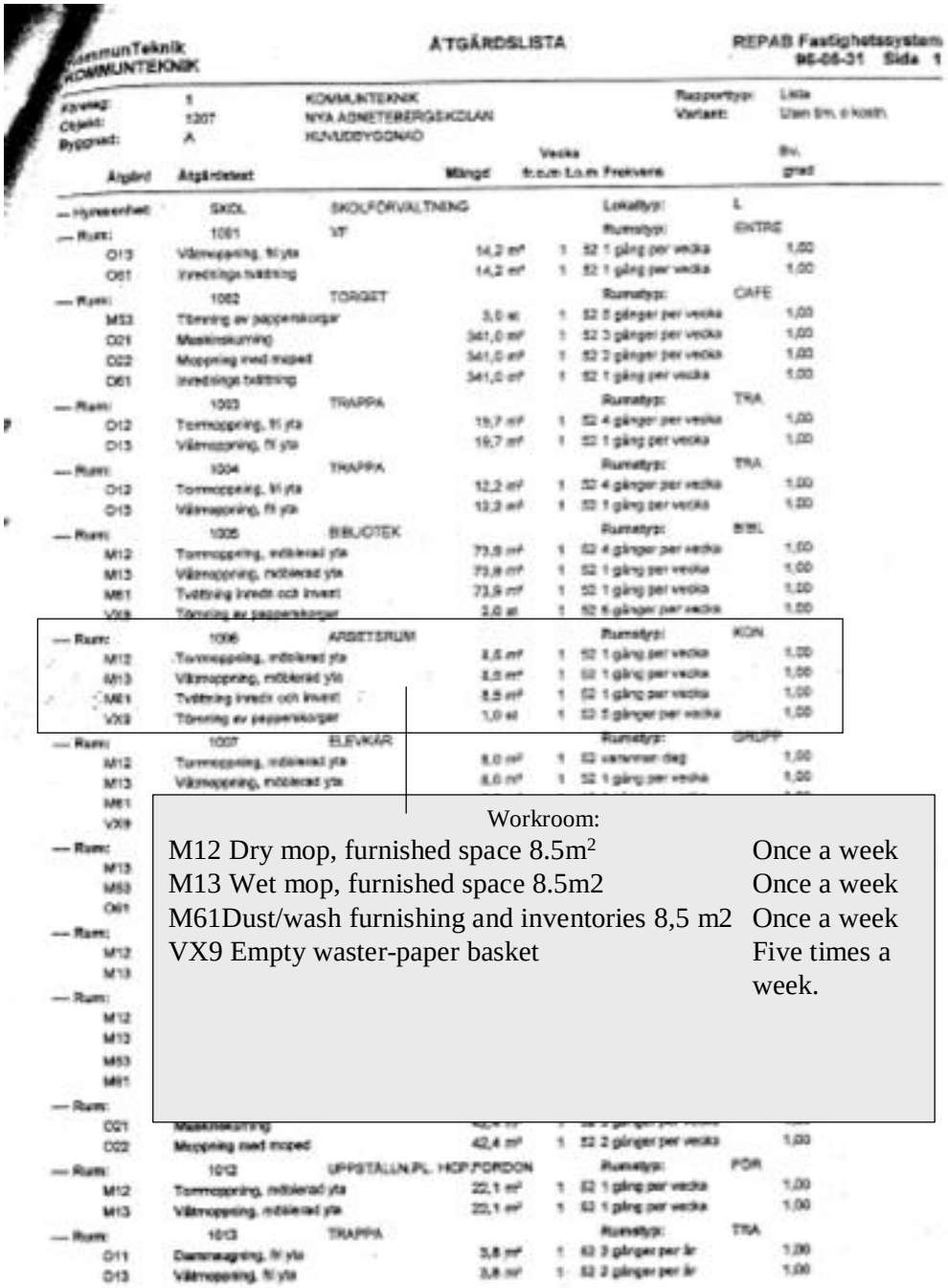
O23 Golvvård (High-Speed)
01 Golvvård (High-Speed)

"Mop with moped. Mop with moped. Conditions: Mop with moped in easy to access spaces such as gymnasiums and broad and long hallways. Estimated time includes manual mop in difficult to access spaces."

O61 Invedni
01

Tvättning av inredning i entré, kapprum, korridorer. I tiden ingår att avfläcka glaspartier, torkning av lister, radiatorer, avfläckning av väggar, speglar m.m.

Figure 3A. Extract from a typical technical specification.



ÅTGÄRDSLISTA

REPAB Fastighetssystem
96-06-31 Sida 1

KOMMUNTEKNIK
NYA AGNETEBERGSKOLAN
HUVUDBYGGNAD

Åtgärd	Åtgärdstext	Mängd	Vecka fr.o.m t.o.m	Frekvens	Utf. grad
— Hyresenhet:	SKOL SKOLFÖRVALTNING			Lokaltyp: L	
— Rum:	1001 VT			Rumstyp: ENTRE	
O13	Våtmoppning, fri yta	14,2 m²	1 52	1 gång per vecka	1,00
O61	Invändiga fuktning	14,2 m²	1 52	1 gång per vecka	1,00
— Rum:	1002 TORGET			Rumstyp: CAFE	
M53	Tömning av papperskorgar	3,0 st	1 52	5 gånger per vecka	1,00
O21	Maskinskurning	341,0 m²	1 52	3 gånger per vecka	1,00
O22	Moppning med moped	341,0 m²	1 52	2 gånger per vecka	1,00
O61	Invändiga fuktning	341,0 m²	1 52	1 gång per vecka	1,00
— Rum:	1003 TRAPPA			Rumstyp: TRA	
O12	Tormoppning, fri yta	19,7 m²	1 52	4 gånger per vecka	1,00
O13	Våtmoppning, fri yta	19,7 m²	1 52	1 gång per vecka	1,00
— Rum:	1004 TRAPPA			Rumstyp: TRA	
O12	Tormoppning, fri yta	12,2 m²	1 52	4 gånger per vecka	1,00
O13	Våtmoppning, fri yta	12,2 m²	1 52	1 gång per vecka	1,00
— Rum:	1005 BIBLIOTEK			Rumstyp: BIBL	
M12	Torrmoppning, möblerad yta	73,9 m²	1 52	4 gånger per vecka	1,00
M13	Våtmoppning, möblerad yta	73,9 m²	1 52	1 gång per vecka	1,00
M61	Tvättning invedn och invent	73,9 m²	1 52	1 gång per vecka	1,00
VX9	Tömning av papperskorgar	2,0 st	1 52	5 gånger per vecka	1,00
— Rum:	1006 ARBETSRUM			Rumstyp: KON	
M12	Torrmoppning, möblerad yta	8,5 m²	1 52	1 gång per vecka	1,00
M13	Våtmoppning, möblerad yta	8,5 m²	1 52	1 gång per vecka	1,00
M61	Tvättning invedn och invent	8,5 m²	1 52	1 gång per vecka	1,00
VX9	Tömning av papperskorgar	1,0 st	1 52	5 gånger per vecka	1,00
— Rum:	1007 ELEVKÅR			Rumstyp: GRUPP	
M12	Torrmoppning, möblerad yta	8,0 m²	1 52	varannan dag	1,00
M13	Våtmoppning, möblerad yta	8,0 m²	1 52	1 gång per vecka	1,00
M61					
VX9					
— Rum:					
M13					
M53					
O61					
— Rum:					
M12					
M13					
— Rum:					
M12					
M13					
M53					
M61					
— Rum:					
O21	Maskinskurning				
O22	Moppning med moped	42,4 m²	1 52	2 gånger per vecka	1,00
— Rum:	1012 UPPSTÄLLN.PL. HCP FORDON			Rumstyp: FOR	
M12	Torrmoppning, möblerad yta	22,1 m²	1 52	1 gång per vecka	1,00
M13	Våtmoppning, möblerad yta	22,1 m²	1 52	1 gång per vecka	1,00
— Rum:	1013 TRAPPA			Rumstyp: TRA	
O11	Dammsugning, fri yta	3,8 m²	1 52	3 gånger per år	1,00
O13	Våtmoppning, fri yta	3,8 m²	1 52	2 gånger per år	1,00

Workroom:

M12 Dry mop, furnished space 8.5m^2	Once a week
M13 Wet mop, furnished space 8.5m2	Once a week
M61Dust/wash furnishing and inventories 8,5 m2	Once a week
VX9 Empty waster-paper basket	Five times a week.

Figure 4A. Example of typical bid.